Electricity on the Farm

A MONTHLY MAGAZINE FOR THE UP-TO-DATE RURAL FAMILY

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FEBRUARY 1935

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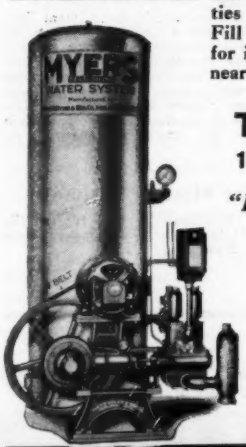

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Vol. 8. No. 2
February, 1935

Electricity on the Farm

EDITORIAL

THE element of chance in farming is being reduced gradually by the development of new equipment and the increasing use of electricity.

As examples, the growing use of electrically driven pumps to provide water for irrigation is reducing the chance of crop failure due to drought; electric brooders and incubators make certain larger and better broods of chicks; electric germination of seed corn insures a better yield, and so on.

One of the latest innovations in electrified farming is a brooder for baby pigs. Experience in its use so far indicates that it is a big step in advance in pig raising, for mortality and injury to baby pigs are reduced to a marked degree. Furthermore, improved litters, particularly noticeable as pigs mature, is evident.

Though late in starting in the rural field, electricity seems to be doing for farming what it has already done for industry.

THE PUBLISHERS.

IN THIS ISSUE

Electric Hovers Prove Practical for Winter Brooding

BY T. E. HIENTON

Last winter provided the acid test for electric brooding in cold weather. How well electric hovers met the test, making possible earlier broilers and laying pullets for the poultrymen, is told in the feature article by T. E. Hienton on page 7.

When Fire Strikes

BY FRED SHEPPERD

Fire, in an uncontrolled state, is one of man's worst enemies because it destroys all combustible material in its pathway. As the majority of farm fires start small, they can be extinguished before serious damage is done if discovered in time. But, to do this water under pressure must be available for instant use. A pressure water system is the answer. See page 10.

There Is a Difference

BY VERA B. MEACHAM

The electric range is different from all other present-day methods of cooking. Its cleanliness, temperature control, dependability and often economy of operation (if properly used) are the features talked about by housewives fortunate enough to own an electric range. If in doubt, read for yourself on page 11 why cooking with electricity is so delightfully different.

Baby Pigs Prefer Brooders

The Oregon Agricultural Experiment Station has conducted a number of tests to determine the desirability of using electric brooders in the raising of baby pigs. They found that the baby pigs preferred the warmth of the brooder to other locations about the pen (when not nursing). The experiments and conclusions therefrom are described in an interesting manner on page 14.

Regular Monthly Features

Electrical Housekeeping, page 16; On the Air, page 19; Questions and Answers, page 20; What's New, page 21.

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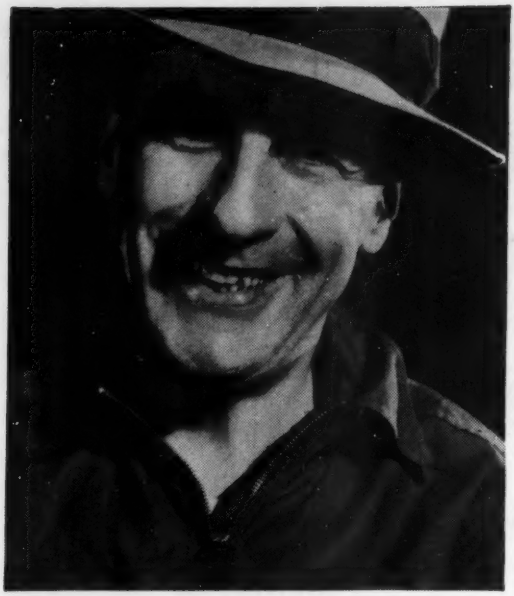

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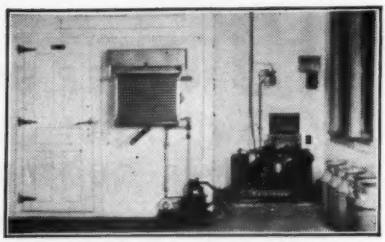

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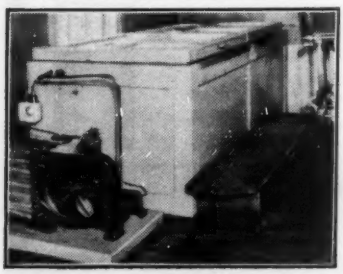

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KELVINATOR

House used in Connecticut to test three makes of electric brooders to determine their value to poultrymen in comparison with coal burning brooders, January 26 to March 1, 1934.

ELECTRIC HOVERS PROVE PRACTICAL for WINTER BROODING

By T. E. HIENTON

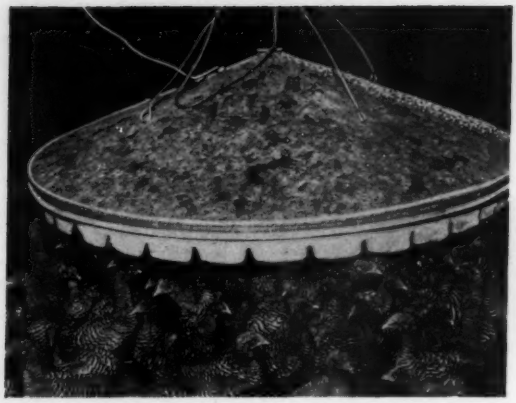
WINTER brooding of chicks with electric hovers, without the use of artificial heat in the brooder house or room, is rapidly becoming an established practice. The experience gained from experimental work by agricultural experiment stations and other agencies together with that of poultrymen has shown that the use of electric brooders during the winter is practical. April, May and June have been considered months most suitable for electric brooders in the northern half of the United States, but their use need no longer be restricted to those months.

Why Winter Brooding Has Increased

The desire to raise early broilers and to have pullets laying early in the fall has resulted in an increase in the number of chicks which are brooded during the winter months. Early hatched broilers have generally brought higher prices in the past than later hatched ones so that early brooding has resulted. Five or six months are required for the lighter breeds, such as Leghorns, to mature and six to seven months for the general purpose breeds, such as Plymouth Rocks. Thus, to obtain August and September eggs from pullets, chicks must be started in February and March.

Several factors are responsible for the use of electric brooders during that period of the year which has been considered least suitable for them. The amount of labor required to care for the brooder is considerably less for an electric brooder than for one where fuel has to be carried or hauled, where ashes must be removed and hauled away, and where frequent attention is required. Several poultrymen in Indiana, who have replaced other brooders with those heated by electricity for winter brooding, list this advantage as more important than any other. The reduction in fire hazard is of enough importance that some fire insurance companies have reduced their rates where electric brooders have replaced those heated by other fuels. Too often, when a brooder stove sets fire to the brooder house, the fire spreads, resulting not only in the loss of brooder, house and chicks, but also in heavy fire loss to other farm buildings.

The success of any brooder is usually measured by the percentage of chicks raised as well as the



Electric brooder on Lawrence County farm in Indiana. The chicks were started in the colony brooder house March 7th and mortality was less than 10 per cent to the end of the brooding period.

energy consumption. In these respects electric brooders compare favorably with those heated by other fuels. Prof. C. W. Carrick, head of the poultry department of Purdue University, reports in Agricultural Extension Bulletin 177 of that institution, that probably a third of the esimated 60 million chicks started on Indiana farms each year, die before they reach marketable age or maturity. Percentage of chicks raised by any brooder depends upon a number of factors so that mortality may not always be a true indication of the performance of the brooder. Disease conditions may be present in the chicks or in the quarters or soil on which they are raised and losses result which are not chargeable to the brooder.

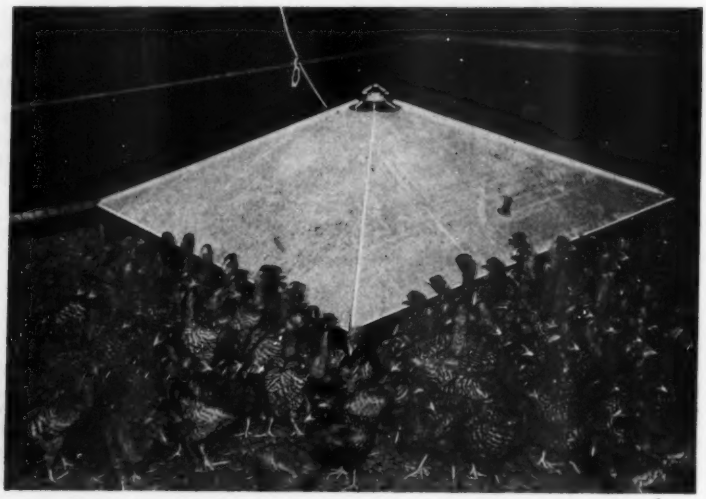
Success of Winter Brooding Established

Success in raising chicks during the winter has been established in New England by an experiment conducted during the winter of 1933-34 by the New Hampshire Agricultural Experiment Station. The weather conditions existing at the time and the results obtained were reported in Station Circular 46 of that institution. It states that "One of the coldest winters on record was experienced, the temperature going as low as 30 degrees below zero. For several days at a time the average for a 24-hour period was approxiately zero. Notwithstanding this extreme temperature, the losses were reasonable and due to causes which might occur under any practical method of brooding."

The average total mortality for chicks raised in insulated houses in the New Hampshire experiment was 10.5 per cent and for those raised in uninsulated houses, 10 per cent. In another test conducted in New England in the state of Connecticut three different makes of electric brooders were operated from January 26 to March 1, 1934. Mortality reported from this test was 6.75, 8.85 and 10.4 per cent for the three brooders during the 6-week brooding period.

During the past two years six different makes or types of electric brooders have been used to raise the chicks on the Purdue University experimental farm near Bedford, Indiana. In 1933, three of the brooders were started during February and March and in 1934 five of them were started during those months. In none of the eight flocks did mortality reach 10 per cent and in two flocks it was less than 5 per cent.

Results of the experimental work reported indicate that winter brooding with electric hovers may be successful from the standpoint of low mortality. As previously mentioned, high mortality may result from diseased chicks, for which the brooder is blameless. Other conditions which



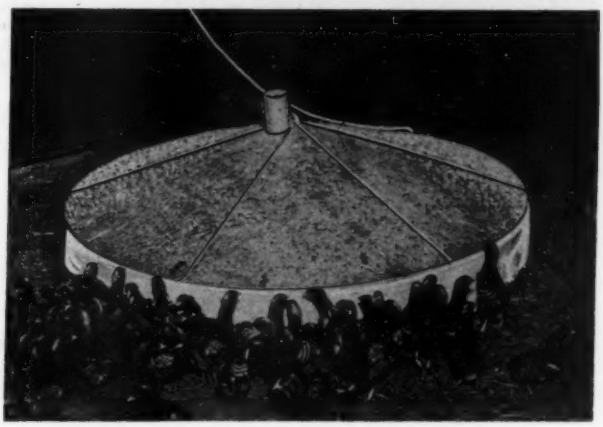
Electric brooder on the Moses-Fell Annex Farm, Bedford, Ind. Chicks were started on March 26th and mortality to end of brooding period was just 6.2 per cent.

may result in excessive mortality which can not be attributed to the brooder are diseased soil on which the chicks range, presence of disease in the house, poor litter, moldy or spoiled feed and overcrowding. Proper directions for raising chicks are usually available from the agricultural extension service of each state agricultural college directly or through the county agricultural agents or farm advisors. These should be followed to insure low mortality.

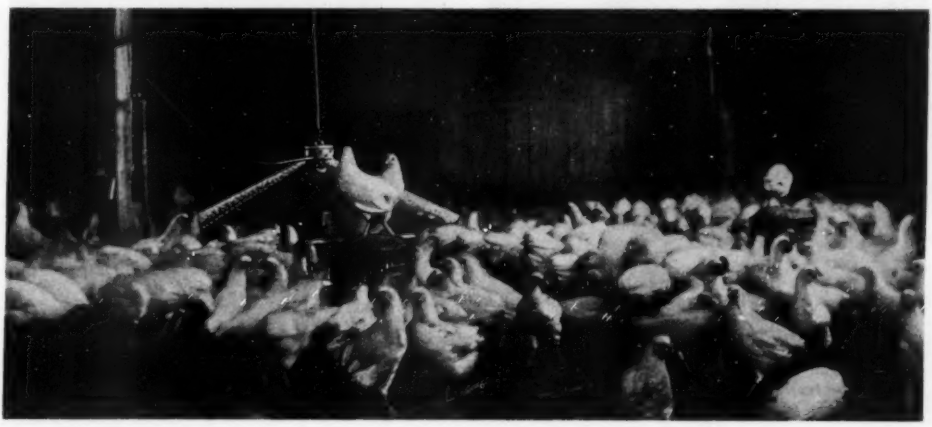
Labor Saving Important Say Poultrymen

Another measure of the success of an electric brooder is the consumption of electric energy. Winter brooding with electric hovers naturally will use more electricity than will spring or summer brooding. Other brooders likewise use more fuel in winter than in spring or summer. Perhaps, the person best qualified to answer the question is the one who has used several types. An ex-extension poultryman of a middle-western states agricultural college who operates a battery and poultry farm near Lafayette, Indiana, has used brooders heated by other fuels, but replaced them with ten electric hovers during the fall of 1933. These brooders were operated during the 1933-34 winter and are being operated during the present winter at a cost for electric current which is about equal to or slightly less than the cost of hard coal. A farmer located within 25 miles of the first poultryman is using electric brooders for winter brooding for his fourth season. He reports, too, that cost for electricity is no more than for hard coal, perhaps less, but stresses the saving in labor which he has made through their use as being the most important factor.

Figures reported from the New Hampshire experiment show an average consumption of 1.55 kilowatt-hours per chick raised in insulated houses and 1.65 kilowatt-hours per chick raised in uninsulated houses. The consumption for the three brooders used in the Connecticut test used 1.16, 1.18 and 1.64 kilowatt-hours respectively per chick raised. Figures reported in Circular 187 (revised) of the Purdue University Agricultural Experiment Station for 60 Indiana flocks raised with electric brooders on Indiana farms from 1929 to 1934 show an average consumption of only 0.516 kilowatt-hour per chick raised. Of this group two brooders were started in February, 12 in March, 34 in April, and 12 in May. It is apparent from these tests that an electric brooder used during winter months will involve heavier consumption than during spring and early summer, but that this is not so great as to prohibit its use at that time of the year.



One of six electric brooders included in Purdue University tests during 1933 and 1934. Mortality of chicks started April 4 to end of brooding period was less than 5 per cent.

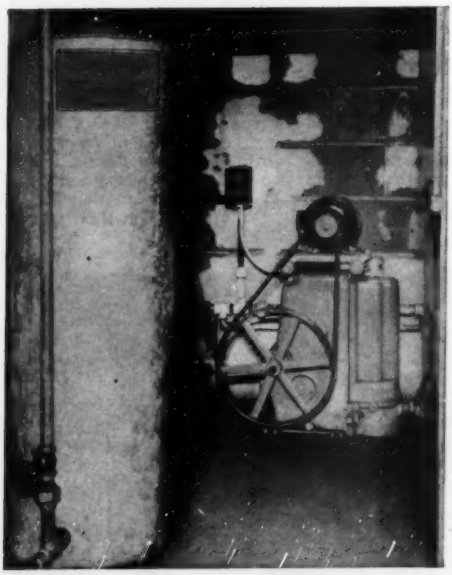


Flock of white leghorns raised in 1934 by E. L. Whitson of New Haven, Md., using an electric brooder. Mr. Whitson reported low mortality, reduced labor requirement and the elimination of fire hazard.

"There is no better insurance against property destruction by fire on the farm than a modern pressure water system with taps fitted with hose lines, placed in the basement of the farm house and in the out-houses. City fire apparatus usually arrives too late to save the building in which the fire originated."

WHEN FIRE STRIKES

By FRED SHEPPERD*



Pressure water system installation on the H. L. Mowrer farm at Madison, Ohio. Faucets supply water in basement, kitchen and bath in house. Taps for sprinkling and fire protection are located about the grounds and water is available in the garage and barn.

A FIRE on the farm is easy to handle just after it starts, but let it gain headway and heavy damage will probably be done. City or town fire apparatus, if called, usually arrives too late to save the building in which the fire originated.

That farm fires start small is evident from the nature of their causes. The principal causes of farm fires, listed in order of their importance, are:

1. Defective chimney flues.
2. Lightning.
3. Sparks on roof.
4. Gasoline and petroleum products.
5. Matches and smoking.
6. Spontaneous ignition.
7. Stoves, furnaces and their pipes.
8. Hot ashes and coal, including open fires.

In many cities over 90% of all fires extinguished by the fire department are put out with "chemical" lines. These chemical lines are small hose lines about the size of garden hose, which deliver on the fire a weak solution of soda and water. The presence of the soda in the water is not for extinguishing purposes; it is there to produce, when mixed with sulphuric acid, a gas pressure for forcing the water-soda solution through the hose and on to the fire. It is the water which puts out the fire and the mixture of soda and water has no more extinguishing effects than a like quantity of plain water.

A fire engine may carry from 30 to 160 gallons of the solution. And yet with this limited quantity it is highly effective in putting out most fires.

In many industrial plants, office buildings, places of public assembly, and even in private homes, small "soda and acid" extinguishers of 2½ or 3 gallons capacity may be found. They have proven themselves, over many years of use, to be very

(*Continued on page* 18)

*Formerly Chairman, Educational Committee, International Association of Fire Chiefs.

The thrift cooker range manufacturers say, will revolutionize the preparation of the famous baked beans.

A good fire, instantly available for cooking by the turn of a switch is just one of the advantages the modern electric range offers the housewife.

THERE IS A DIFFERENCE

By VERA B. MEACHAM

Broiling a steak.

IN the foothills of the Smokies, down in South Carolina, lives a family with one of the best cooks I know. Veeny has been cooking for Mrs. Small ever since she started housekeeping, and that was twenty-seven years ago. Year before last the Smalls bought an electric range. Mr. and Mrs. Small both spent some time showing Veeny just how it worked, and she seemed to understand it perfectly.

Just a couple of days after the range was set up in his kitchen, Mr. Small was called to California on a business trip, Mrs. Small decided to go with him. When they got back a month later, Veeny greeted them with broad smiles of welcome.

After she had unpacked, Mrs. Small went out into the kitchen.

"How is the new stove going, Veeny?" she asked. "Do you like it pretty well?"

"That sure am one gran' stove, Miss Cassie!" Veeny exclaimed. "I turned this lil' button lak you showed me, an' built me a fire, an' it ain' gone out since you been gone."

After twenty-seven years of fire building, that, in the eyes of Veeny was the prime achievement of any stove, a fire that wouldn't go out. She hadn't got it through her head that she could have a fire any time she turned that button. So she was not taking any chances; she just kept it going right along.

Electric ranges *are* different. A fire always ready at your finger tips is just a part of the convenience that electricity offers as a fuel. Auto-

The ever-ready servant of the modern kitchen.

matic control of that fire is another. In a sense the heat of the surface burners is automatically controlled, for any burner delivers always exactly the amount of heat its wiring calls for. And each burner has three different heats. This heat does not vary from day to day, because the fuel cannot vary. You can count on its being just the same one time as another.

But it is really the regulators that control the temperature of the oven that I mean when I spoke of the convenience of automatic control. These regulators are accurate and reliable. You can set the dial on your oven for the baking temperature you want, turn the current on, and when that temperature is reached, the regulator turns the current off. When the temperature falls, it will turn the current on again, keeping that up so long as the switch is turned on.

This gives any cook freedom from the responsibility of guessing whether the fire is hot enough or too hot, as well as release from watching over the oven and regulating the temperature with sticks of wood or the draft in the chimney.

This accurately controlled heat brings the same good results for every baking, for the fire is never a matter of luck.

It is convenient to broil with an electric range. Perhaps you are not in the habit of having broiled steak at your house. If you are not, there is a cooking experiment ahead of you that all the family will enjoy.

The unit in the top of the oven makes your broiling fire, and a pan with a rack across the top, a pan just wide enough to fit into the guides on the side of the oven, holds the meat right under the glowing wires where it is very, very hot. The direct heat cooks the meat quickly.

Directions for Broiling

Mildred A. Nichols, Home Economist for one of the eastern stove companies, gives these concise directions for broiling on an electric range.

"You simply turn the temperature control to the highest temperature, because you don't want the heat to go off at all while you are broiling. Turning the broiler switch on. Place the meat on racks of broiling pan. Have the food about two inches from the unit. Excellent results may be had by turning the meat only once. Leave the door open a crack because you want plenty of air circulation."

Some one else suggests that you put the broiler pan and rack into the oven close to the top unit and let it heat for ten minutes before you put the meat in.

I would not have you think that steak is the only thing to broil. Far from it. Calf's liver, hamburger, chops and fish are delicious broiled. And while you are at it, you can always add cooked vegetables to the lower part of the broiler pan and heat them through while the meat is cooking. You can roll them in flour, dot them with butter and brown them under the broiler along with the chops, too. Tomatoes, apple rings, slices of pineapple and halves of peaches just cooked under the broiler a very few minutes are an appetizing and colorful addition to the meal.

Some ranges have a broiling unit in a drawer by itself. The front of the drawer drops down

A broiled dinner.

so you can adjust the rack the desired distance from the heat, and take the food out easily. When you push in the drawer—and it runs on roller bearings so it slides smoothly—the food is under the electric unit. A special boiler like this leaves the oven free for baking if you need it.

There is a difference in the amount of fuel you use when you cook with electricity. Electric cooking can be very thrifty because you can use just the electricity you need for any job. You can turn the current on High long enough to bring your food to boiling; then turning the switch to Low, you can cut off three-quarters of the current and still keep your vegetables boiling at a great rate. You can even turn the current off entirely ten or fifteen minutes—the time varies with different ranges—ten or fifteen minutes before the end of the cooking time and the heat stored in the burner will keep up the boiling.

Electric Elements Retain Heat

No other stove I know will keep on cooking the dinner after the fire goes out.

In an effort to help their customers get the most out of the electricity they buy for fuel, some manufacturers have built a special cooker to take the place of one of the cooking units on the top of the range. The manufacturer who first made one of these cookers called it a thrift cooker because it did so much with so little current.

This cooker has a five-quart kettle that fits into an insulated well with a small unit, 660 watts at the bottom. It can be used for a great variety of things.

First of all it is a steamer.

They tell me that a cup of water in the cooker will maintain enough steam to cook brown breads and puddings. Or you can put in a quart of string beans, add half a cup of cold water, season the beans, adding meat or butter as you prefer, and then turn the current on High for twenty minutes, and to Low until the beans are done.

In their experimental kitchen these people have devised a new way of cooking navy beans that should supplant the Thursday to Saturday baking my new England grandmother favored.

This, they say, is the way to do it.

1 lb. navy beans	6 tbsp. sugar
1 tsp. salt	½ lb. salt pork
2 tbsp. molasses	4 cups water.

Measure and wash the beans. Mix them with other ingredients, cover and cook on Low for 8-12 hours. Since Low takes just 90 watts of current, this whole baking would use around 1 kilowatt hour.

The steady low heat makes this vessel a perfect waterless cooker. And it gives just the right temperature for getting the flavor from meat and vegetables for soup. Then if you want to bake a few potatoes, you can do it in an hour by leaving them switch on High and keeping the cover slightly ajar so steam can escape.

On one make of ranges this built in, insulated cooker sits in a narrow drawer in the cabinet below the cooking top of the range, and pulls out so you can get at it. On still another, it stands on a shelf attached to a door that swings the cooker out for use, and in again, out of sight, when the cooking is done.

As you know, there are other savings to be made when you cook with electricity, too, not savings of fuel, but savings of food. The exactly controlled heat makes it easy to steam vegetables with very little water and so save their valuable minerals, and meats roasted in an electric oven show very little shrinkage. You may not be able to budget these savings exactly, but they are unquestionably there.

The thrift cooker swings out on the door.

This most modern method of cooking is the most convenient method. It is reliable, too, and frugal. Foods taste better, failures are less common; time is saved.

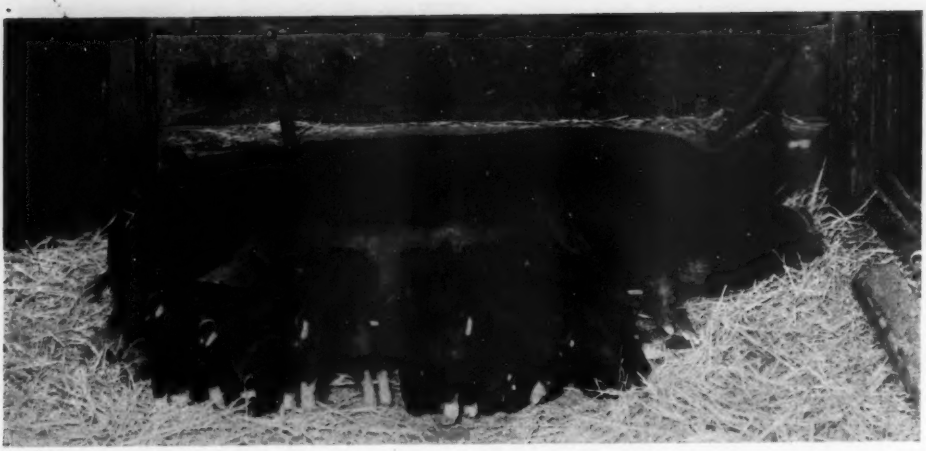
There is a difference when you cook with electricity.

Electric Hotbed Aids Seed Potato "Indexing"

Farmers who make a specialty of growing certified seed potatoes know the value of the method of tuber indexing worked out by the Federal and State potato specialists, and now the development of electric hotbeds has made this method more practical in areas where electricity is cheap.

Tuber indexing is a way of weeding out potatoes that carry infectious virus diseases in the tubers. A commercial grower does not, as a rule, try to index potatoes which he plants to harvest for commercial seed. Instead he indexes the tubers for the small area he plants to provide his own seed for the following year. To "index" a potato, he cuts out one eye from a selected tuber and grows this some time during the winter, keeping a record or index of each eye and of the potato from which it came. If one of the young plants grown in this way shows symptoms of a virus disease, the original tuber is discarded.

In the past it has been necessary to plant in pots and grow the test material in a greenhouse and not many growers have found this practical. But T. P. Dykstra of the Bureau of Plant Industry experimenting in Oregon where electric current is cheap has found that it is practical and satisfactory to test indexed tubers in an electrically-heated hotbed. Some commercial growers have followed this lead in indexing varieties which are especially susceptible to virus diseases, but otherwise desirable.



To the sow for their meals, but back to the brooder for a share of its warmth.

BABY PIGS PREFER BROODERS

OUT at the Oregon Agricultural Experiment Station they have proven that mortality among baby pigs can be reduced by the use of electric pig brooders. Furthermore, the little fellows (and girls) actually prefer the brooder to their mother—when they aren't nursing.

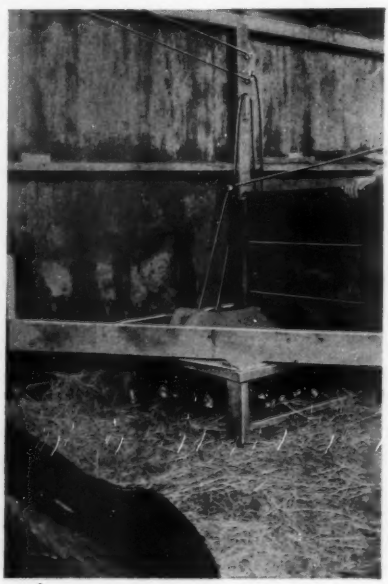
A report published by the Experiment Station says: "The advantages that were observed (with the electric brooder for baby pigs) were that the small pigs would stay in the brooder and would not be against the sow when she was lying down and would not be around her feet when she was standing or moving about the pen. This reduced the number of crippled pigs, as the sow did not step on the pigs' toes as much as when no brooder was used. . . . The pigs would go to the brooder as soon as they were through nursing and would stay there most of the time until ready to nurse again. The brooder would ordinarily be used for ten days or two weeks, depending on the weather."

However, if the milk supply of the sow is scanty the baby pigs, not being able to satisfy their appetites, are inclined to remain by the sow instead of returning to the brooder.

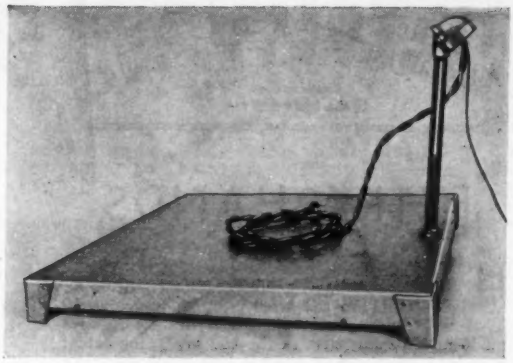
Using electricity to provide heat for baby pigs has been tried in previous years by using an ordinary household type of radiant heater of 500 watt size. This method did not prove entirely satisfactory. The power consumption was rather high and the presence of the exposed heating element represented a fire hazard.

In the fall of 1932 the Oregon Agricultural Experiment Station first gave consideration to the development of a brooder especially for pigs. A 30 x 40-inch galvanized iron tray, which was warmed by electric heating wire under it and controlled by an adjustable thermostat was tried first. This was placed in one corner of the pen with a hover over it, as shown to the left. A 2 x 6 placed across the corner kept the sow away from the brooder.

It was soon found that the pigs preferred the warm metal pan for a bed to the



Pig brooder with 2x6 guard rail to keep sow away from brooder. Note burlap cover, the sides of which are raised to show baby pigs.



Type of brooder base recommended by the Oregon Agricultural Experiment Station.

Besides being a piece of valuable equipment for cold nights and early spring farrowing, mortality among baby pigs is said to have been reduced by the use of the electric brooder.

straw on the cold concrete floor.

Consideration was then given to a pig brooder of the bottom heat type. Lead sheathed electric soil heating cable drawing 108 watts on 120 volts for a single brooder was used.

Several brooders were constructed, using 1 x 2-inch material for the four sides and cross supports. By experiments it was found that a brooker 2 feet square was sufficiently large for 12 pigs and that 85 to 100 watts was the required amount of heat if the brooder was covered on the bottom.

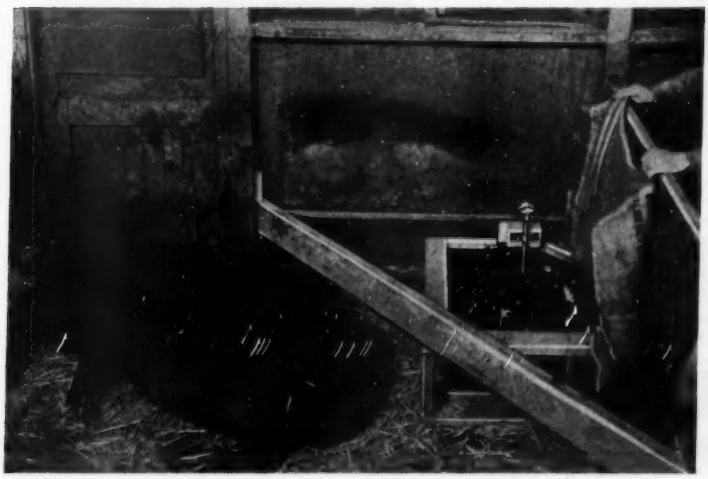
The first brooders were built open on the under side and to lay flat on the concrete floor. It was found much more desirable to have one-inch legs on the brooder to keep it off the wet floor and also it was found that much less heat was required if the brooder was closed on the bottom side.

Small Units Satisfactory, Too

The Experiment Station also made smaller brooders, of a size to accommodate six baby pigs. These were used at the Oregon State Agricultural College for spring farrowing. This small type of brooder, which was heated by copper sheathed soil heating cable, drawing 85 watts, was entirely satisfactory. With this small amount of heat the brooder must be closed on the bottom side. A large brooder would, of course, require more heat.

Especially Valuable on Cold Nights

With regard to the performance of the electric brooder for raising baby pigs, the Experiment Station concludes: "It would appear that the electric brooder would be a particularly valuable piece of equipment in eastern Oregon or in parts of the country where the winters are cold and during the early spring farrowing of March and April when the nights are cold."



Burlap cover raised to show details of installation.

ELECTRICAL HOUSEKEEPING

Conducted by
GAIL MEREDITH

EXTRA HANDS

HOW long does your husband's wife work? Perhaps you haven't noticed, but if she is an average housewife, she works 51.6 hours a week. That is according to various government surveys made in different parts of the country. Her actual days may be longer or shorter. This does not take into account the work she may do outside. Circumstances and families as well as management have a lot to say about this working day. Most

You'll surely find one to your liking.

of us, we must admit, just keep right on working till the work is done. We are our own overseers, and if our hours are ever shortened, we will have to shorten them some way ourselves.

You can't do it by codes, nor is there much use of expecting to do it through a multiplicity of woman power any more. When every family had an extra aunt or a grown up daughter or two waiting to be married, there were additional hands to take care of the work. For daughters must learn, and extra aunts were sure to have a finger in most of the household pies.

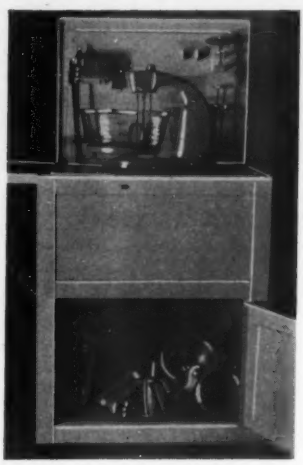
I do not mean to sound as though extra aunts are by any means extinct. Just last winter Mrs. Volney Barnes, chairman of the drama section of the Woman's club in Madison, Wisconsin, was judging the state rural drama tournament. Every single play, or so it seemed to her, had an aged aunt mixed up in the plot.

"Oh, dear," she sighed at last, "Auntsé Aunts! Aunts! I don't believe there are so many aunts in the world.

"Yessum," said a small boy sitting near her. "There are; we've got two at our house. One of them's a grandmother."

So, of course, we know there are still aunts. The trouble is that they and the grandmothers and the hired girls that used to offer extra hands for the housework are not doing so any more. The aunts are running roadside stands; the daughters are teaching school, and too many of the hired girls have married the cheesemaker. In most of the homes the country over, one pair of hands is left with all the jobs.

We are much more apt to get those extra hands



This mixer can be tucked away in its own cabinet.

through machinery. Almost half of that 51 hours, the investigators found, is spent with food in one way or another. Electric mixing machines offer a strong right arm to any cook and take a good sized nip out of that job.

The big ones are simply but sturdily made. In one the motor is built into a heavy gray housing that covers the shaft to which the different tools are attached. Besides the gears and shafts that drive the beaters there is a mechanism to move the arms that hold the bowls in place. If you push a lever one way, the bowls drop so you can attach the beater; turn it another, and they rise to hold the food up where the beater can get at it.

The different tools slip on and off easily. They

Sturdy construction assures strong hands to help you.

and the mixing bowls are made of a metal that is easy to clean.

The smallest of the motor-driven beaters will whip cream, beat eggs, mix salad dressing, and

The storage cabinet keeps the attachments from going astray.

stir up a light batter. The bigger ones will do all this and more; they have whole rows of special tools for dozens of irksome jobs. They will beat and mix; they will slice and shred; they will turn a roller round and round in a colander to push fruit pulp through for marmalades or vegetables for purees; they will grind coffee and chop meat.

For Many Other Tasks Too

My neighbor on the left has an attachment for her mixer that will shell peas and another to peel potatoes. Down the road a ways, the Jessups open cans and polish silver with theirs. We can even make our motor chip the ice and turn the crank on the ice cream freezer.

This year a new cabinet has appeared with two

All set to go—just put on the proper attachment.

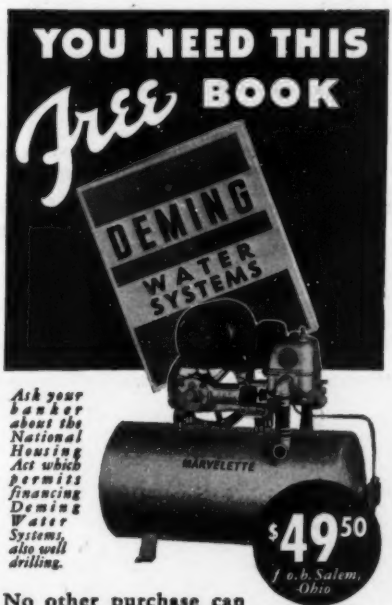
of the beaters. It is a metal box, table high. When the cover is down, it is just another working space in the kitchen, but when you lift the lid, and push a button, a second top rises with the beater in place for all the world like a slow motion jack-in-the-box. You can plug the beater in and start creaming shortening without more ado. When you finish using it, you press the button again, and the top and beater sink slowly down into the box. The beater is not attached to the box and can be used anywhere.

In the bottom of the cabinet there is a place to store the orange juicer, the meat grinder, and any other attachments you have.

My husband says the mixing machine at our house has had to do everything but plan the meals. I admit it leads a busy life, but that is what it is for. It is a complete kitchen power plant. It has got to do its share of the jobs that go into this business of getting three meals a day—all that a motor can do as well as a woman.

I start my motor in the morning to squeeze orange juice. I keep it going mixing, beating, kneading while I bake. I use it to slice vegetables, to mash potatoes, and whip cream for dessert. Then long after the kitchen has been tucked

YOU NEED THIS
Free BOOK



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neatly away for the night, some one is just as apt as not to come out and set it to work again beating candy.

All day long its extra hands save my strength and cut down the time I must spend in the kitchen. While the motor creams the butter and sugar, I can be sifting the flour and measuring the baking powder for a cake. While the dough hook is kneading the bread, I can dust the living room. That sounds as though this mixing machine were a sort of mechanical tyrant forever hustling me along to keep up, doesn't it? It is not, though. Sometimes, while it does the work, I carefully do nothing at all.

You cannot buy help outright like a motor; you must rent it, as it were. And the upkeep is sure to be high. But it costs very little to buy electricity to feed a mixing machine. A one-sixth horsepower motor is common for them, and that takes about 200 watts of electricity. You could run such a motor five hours straight with one kilowatt hour of current.

• • •

With COTTAGE CHEESE

LUNCH baskets again! Lunch baskets five days out of seven! Well, here are some grand new sandwiches I've learned this summer—five of them,—all made of cottage cheese.

My neighbor next door gave me the first one. For it you run an onion and a green pepper through your meat grinder and mix it lightly with cottage cheese. Plenty of salt gives this zest.

The second has pickles chopped fine, and a few tender shoots of chives if you have some in your garden.

For the third you chop celery and grate carrots, mixing them through the cottage cheese with just enough salad dressing to give a new flavor.

The last two are sweet sandwiches, a little dressy perhaps. One has chopped raisins and nuts added to the cheese and the other has orange marmalade. If you don't believe that's good, just try it some time.

When Fire Strikes

(*Continued from page* 10)

effective in handling little fires, that is, fires shortly after they have started.

The modern farm with a pressure water system is in an excellent position to provide itself with very effective fire protection. Just as city fire departments have found that most fires can be extinguished with little water, farmers, too, will find that pressure systems, if provided with convenient taps and hose lines fitted with nozzles, can handle practically any fire which starts, provided it is caught early in its progress.

Among professional fire fighters there is a saying that "it's the first five minutes that counts" when handling a fire. If water can be put on the fire in a couple or three minutes there is little chance of it spreading.

The water system is much more effective than are chemical extinguishers, for the water system is pretty sure to be in good condition at all times, due to the fact that it is used constantly by farm folks. On the other hand, chemical extinguishers, no matter how good, may prove of little use as the result of neglect, permitting the chemical within to evaporate or deteriorate.

There is no better insurance against property destruction by fire on the farm than a modern pressure water system with taps, fitted with hose lines, placed in the basement of the farm house and in the out-houses. After all, speed is most essential, and if the fire fighting equipment is placed so as to be operated promptly, there is little chance of a fire gaining headway if it is detected shortly after starting.

A water pressure system with a supply available for instant use may be the means of averting the destruction of a barn or other farm building.

ON THE AIR

Conducted by JEROME J. HENRY

Edwin Hill in "Forum of Liberty

"THE Forum of Liberty" featuring discussions of public events by leading citizens in industry and public life, with a setting of dramatic narrative and music, opened over CBS stations late in October. The programs may be heard every Thursday evening over Columbia stations.

Fulton Oursler conducts the Forum, introducing the various speakers, and Edwin C. Hill, noted news commentator, famous for his "human side of the news" series, delivers narratives depicting the building of industrial America and dramatizing the vital forces behind the important issues of the day.

As a whole, "The Forum of Liberty" is presenting vital close-range surveys of the forces and issues confronting America today.

• • •

George Givot Stars in Series

GEORGE GIVOT, the "Greek Ambassador of Good Will," is in the midst of a summer series of entertaining programs featured every Tuesday evening over Columbia Broadcasting System stations. He is heard in the broadcast along with Freddie Rich's band of 45 pieces.

Long a favorite purveyor of Greek dialect on the stage, Givot has won many followers as the proprietor of that strange restaurant, "Acropolis No. 7." The restaurant is particularly famous for its blue plates, process servers, and red plush carpets.

Most of Givot's comedy routine centers around the restaurant, although George occasionally journeys to the sheriff's office or other haunts of the law, as fate requires.

• • •

Ragtime Is Still Alive

ALWAYS alert to new trends in music Jack Denny, one of radio's favorites, has noticed a rather odd thing about the public's taste in music. Customarily it is believed that ragtime is passe.

Yet every time Denny plays an old ragtime tune in one of his broadcasts, the public's comments on it are enthusiastic.

There is a steady demand for such old favorites as "Avalon," "Cecilia," and "Bambolina." They and many others have endured over a long period of time.

This fact leads the orchestra leader to believe that it is not what, but how, a number is played that matters. It is the instruments which have swung from the raucous blaring brasses, to more melodic orchestration that are responsible for improved quality. Then Denny believes nothing is more true than that "an old tune done in the modern manner" leads in popularity at the present time.

Josephine Gibson comes to the microphone looking more like a debutante than a food expert. She's heard in a series of talks for modern housewives. Miss Gibson, still in her twenties, is head of the home economics department of a large foods company and a veteran broadcaster as well.

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Slightly higher west of Denver. Complete with 20 ft. cord and plug, powerful, air-cooled, universal motor inside the handle for 100-120 volts. Special voltages slightly higher. Specify available current.

Questions and Answers

Question: *I would appreciate some information concerning the following:*

We have a reciprocating type pump operated by a ¼ hp. repulsion-induction motor which runs on 110 volt A.C. current. Last winter we had two motors burn out. One burnt out because of insufficient current; the other because water froze in the pump, thus locking the cylinder which could not be moved, although the motor pulley slipped over the belt.

If I should install an automatic switch, would that disconnect the motor in case of insufficient current and if the pump froze?

Does it make any difference in which direction the motor shaft runs when connected to the pump?

A. SPRECHER

Answer: The ordinary pressure switch on a water system will only start and stop the motor as the air pressure within the tank decreases or increases. Such a switch insures the motor no protection from overload or low voltage. There is a combination pressure switch and thermal overload control for water systems now on the market, but as yet not in general use. A switch of this type is made by the Square D Company of Detroit; possibly other electrical companies manufacture similar switches. Such a switch will give the protection desired.

The direction of rotation of a motor has no effect on shallow well systems where the driven pulley is mounted on the crankshaft without the use of gears for speed reduction. With pump jack operation the motor should rotate so the upstroke of the jackarms are in a vertical position. Some deep well pumping heads are designed to produce slower action on the upstroke than on the down stroke, and the motor should rotate accordingly.

On most water systems and pump jacks that are designed to operate in only one direction, there will be an arrow indicating the direction of rotation of the pulley.

Question: *I was interested in an article on electrified fencing in a recent issue of a farm paper.*

A part of our Fair Grounds is protected by wire fence. We have the usual problem of discouraging young men and boys from climbing over and are always at considerable expense for fence patrol. It has occurred to us that electrifying of the two barb wires running along the top of this wire fence would serve to discourage fence climbing.

We need some additional information in order to reach a decision regarding this matter and desire the following and possibly some other questions answered in this connection. If you are not in a position to advise us, will you kindly refer us to some one competent to furnish us with the information we need?

Presumably anyone attempting to climb our Fair Grounds fence would have his foot off the ground, perhaps on other wires of the fence or would be held up by a second party. Under these conditions, would a charge of 110 volts be dangerous?

Will ordinary galvanized barb wire successfully carry the electric charge?

If so, are special fasteners at post required?

Are two wires necessary in order to keep the fence electrically charged?

We would appreciate your cooperation in securing for us this information and any other related information that you think would be pertinent in our case.

W. A. L.

Answer: Under the electric fencing method commonly used ordinary barbed wire should prove satisfactory in conducting sufficient electric charge entirely around the ordinary fair grounds.

Two wires would prove preferable to one wire as the desired electric shock is assured as soon as contact is made between the two wires. Where only one wire is used a shock might not result unless a good ground was established. The energized wire should be insulated from any ground connection.

I would advise that this method of protecting fair grounds from human trespassers would *not* be used under any circumstances. In the first place, I would question the legality of the practice. To subject privately owned farm stock on private property to an electric shock may be entirely different than using similar methods on people.

Mechanically, the electric unit employed may embody maximum safety features, but no one can guarantee the effect of an electric shock to the human body.

As a protective method against fence climbing I do not believe the suggested system would be effective; some smart boy would either cut or ground the energized wire.

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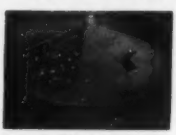

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What's New

Reviewed by T. E. HIENTON

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request. Address your requests to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

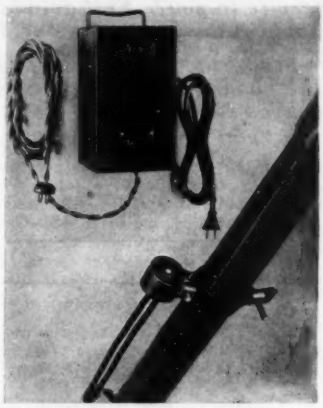
Electric Automobile Engine Heaters

Any motorist, who stores his car in an unheated garage, knows that cars start harder in winter than in summer, at least in the northern half of the United States. Oil becomes stiff over night and fuel vaporizes less easily, both of which combine to render starting more difficult and make harder work for the battery.

Electric heaters which prevent the engine, oil and cooling solution from becoming extremely cold may be used at night to make starting easier each morning. Two types of automobile engine heaters have been recently announced by a well known manufacturer of electric heating equipment. The immersion type heater of 125-watts capacity, is installed in the lower hose connection between the radiator and the engine. It is equipped with 6 feet of rubber-covered extension cord for use on 115-volt circuits. The strip type heater, also for 115-volt outlets is of 150-watts capacity and is supplied with 6 feet of heater cord. This type of heater may be clamped to the engine block or intake manifold or placed at the bottom of the radiator on the inside face.

Battery Charger

Winter starting often lowers the charge of the storage battery to a point where it must be removed for charging. An additional load is placed on the battery by installation of a radio, heater or cigar lighter. A new battery charger, of recent announcement, designed for use by the private car owner, charges at a 5-ampere rate and will give a weak battery a powerful boost during the night.



The installation of the permanent outlet under the dash with connections to ammeter and ground may be made by any novice. Danger of an overcharge is minimized by the tapering off of the charging rate as the battery reaches full capacity. The charger may be moved from one location to another or permanently installed in the garage.

Electric Soil Sterilizer

The importance of having soil free from disease, insect pests and noxious weed seeds is well recognized by greenhouse men and others who grow valuable plants. The announcement of equipment for and construction of a new ½ cubic yard electric soil sterilizer adds another item of equipment for agricultural use to the ever lengthening list of a large manufacturer. Four sterilizer units, each rated at 750 watts and 115 volts, are specified for the sterilizer. Other material furnished with the sterilizer units includes three mounting straps

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and give it new life, make it faster cooking—and save electric power. Flat surface is easy to clean. No shocks—no exposed wires. Ask your power company about the free trial offer—or write us.

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FOR THE HOUSEHOLD

Ranges (*see advt., inside front cover*)—Refrigerators (*see advt., pages 6 and 20*)—Clothes Washers—Vacuum Cleaners—Ironing Machines—Dishwashers—Flat Irons—Food Preparing Machines—Ice Cream Freezers—Sewing Machines — Table Cooking Appliances — Clocks—Range Replacement Units (*see advt., inside front cover and page 21*)—Floor Polishers.

FOR WATER SUPPLY

Automatic Water Systems (*see advt., pages 3, 5, 17 and 20*)—Water Heaters (*see advt., inside front cover and page 21*)—Controls—Septic Tanks (*see advt., page 20*).

FOR THE DAIRY

Milking Machines—Milk Coolers (*see advt., pages 6, 20 and 21*) — Cream Separators — Churns — Bottle Washers—Dairy Sterilizers (*see advt., page 21*)—Clipping and Grooming Machines (*see advt., page 19*).

FOR POULTRY

Incubators — Brooders (*see advt., page 20*) — Time Switches — Drinking Fountain Warmers (*see advt., page 20*) — Ultraviolet Light — Thermostats.

FOR REPAIR AND MAINTENANCE

Soldering Irons — Tool Grinders — Drills (*see advt., page 19*)—Paint Sprayers—Woodworking Machinery—Motors.

MISCELLANEOUS

Feed Grinders—Ensilage Cutters—Corn Shellers—Hay Hoists — Feed Mixers — Stationary Spray Plants (*see advt., page 3*) — Burglar Alarms — Ventilators — Soil Heating Equipment—Insect Traps and Screens—Electric Fencing—Radio Sets—Sheep Shearing (*see advt., page 19*)—Light for Stimulating Plant Growth—Floodlights—Bunch Tyer—Vegetable Washer—Motors.

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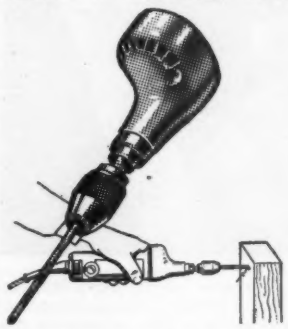
and twelve mounting bolts for assembling the units in the sterilizer. A switch suitable for use with the sterilizer unit may also be secured. Plans for construction of the sterilizer give sufficient dimensions to permit ordering material before construction is begun.

Power Unit for Clipping, Shearing or Drilling

Shearing sheep and clipping cattle and horses has been reduced to a one-man job by the application of electric power to these machines. Elimination of the extra labor, required where hand power operate the machine, by the electric motor has resulted in a considerable saving in power cost.

A very new machine not only shears or clips by merely changing the shearing or clipping heads but also drills wood or metal, up to 3/16 inch hole, by use of the head for that purpose. The various heads can be interchanged on the power unit by removing two screws. A ball-bearing, air-cooled, 1800 r.p.m. motor is located in the handpiece. The motor is of the universal type for any 110-volt current, alternating current of any cycle, or direct current. It is also available in the universal type for 220-volt current, or for 32-volt direct current. The clipper head, shearing head and drill head are available separately or in combination with the handpiece with self-contained motor.



Visitor: "Does the giraffe get a sore throat when he gets wet feet?"
Attendant: "Yes, sir, but not until the following week."

CLASSIFIED ADVERTISING

BROODERS—The unexcelled "Lyon Improved Electric." Other practical well proven types. ALARMS—Burglar, Fire, Temperature, Power-Off, etc. HEATING EQUIPMENT—for incubators, home made brooders. Water heaters. FLY and INSECT KILLERS—Send for complete electrical catalog and brooding data. LYON ELECTRIC CO., San Diego, Calif. (Pioneers of Electric Brooding).

The PARAGON POULTRY TIME SWITCH is scientifically designed and approved by state universities. It provides automatic control both morning and night and DIMS THE LIGHT AT NIGHT to allow the hens to return to roost. Low price and UNCONDITIONALLY GUARANTEED. WRITE for full information today. PARAGON ELECTRIC COMPANY, Van Buren and Dearborn Sts., Chicago, Ill.

COVER TITLE CONTEST

DECEMBER COVER

Awards for December

First Prize — $20

"The solemn calm of Christmas night
Becomes radiant with electric light."

JOHN E. KROME, Homestead, Fla.

Nine $2.00 Cash Prizes

"The Christmas tree is lighted, the house is all aglow,
The kilowatts are busy guiding Santa thru the snow."
FAYE T. WHEATLEY, P. O. Box 201, Tulsa, Okla.

"The old homestead—modern today,
Due to electricity showing the way."
ANNA M. ZEBLEY, R.F.D. 2, Brandywine Summit, Penna.

"The old home is saying it right,
'Merry Christmas' with electric light."
MRS. EDMUND E. BURROUGHS, R.F.D. 1, Titusville, N. J.

"'Twas the night before Christmas when all over the lot
Not a thing was stirring except Kilowatt."
E. S. REDMAN, R.F.D. 1, Mt. Airy, N. C.

"To some Xmas cheer comes only once a year.
To us with electricity, it comes every day of the year."
CLARA M. TJEBBEN, R.F.D. 1, Manson, Ia.

"As by the guiding star that shone That Night,
Wise men today are guided by electric light."
CATHERINE KIKTA, R.F.D. 1, Box 10, Masontown, Penna.

"This pleasant old farm house seems proud to say,
"Merry Xmas and Happy New Year, in an electric way."
MARY KIRCHNER, Box 59, Becket, Mass.

"Electrified from year to year,
A rural setting of Yuletide Cheer."
CHARLES R. BEHLE, R.F.D. 1, Fond du Lac, Wis.

"An old-fashioned Christmas in all its simplicity,
Is made more joyous with the aid of electricity."
CLIFFORD S. ECKHART, R.F.D. 3, Leighton, Penna.

FEBRUARY RULES

Ten cash prizes will be awarded for the 10 best titles for the picture on the front cover of this magazine.

The first prize will be $20 cash, and nine second prizes of $2 in cash will be awarded.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

Titles should be brief — the shorter the better — and short slogans will be given preferences over rhymes.

All members of the farm family to whom this magazine was sent may submit titles, but each contestant may submit only one title.

Question "A" must be answered.

Entries must be sent to the Title Editor, ELECTRICITY ON THE FARM, 6 North Michigan Avenue, Chicago, Illinois, before March 1st.

Winning names and titles will be announced in the April issue.

Send your title on the coupon or make out a similar form on a plain sheet of paper or government postcard.

My title for the February Front Cover picture of ELECTRICITY ON THE FARM is .....

.....

.....

.....

(a) Have farming conditions improved in your territory? ..... If so, what per-cent. increase in income do you expect in 1935? .....

My name is ..... R. F. D. .....

Post Office ..... County ..... State 2-35

ICE
1 HOUR
A KILOWATT-HOUR
Is The Combined Muscle Power
OF THIRTEEN PEOPLE FOR AN HOUR
(Interpreted by E.C. Sanford and C.M. Ripley)

ASK YOUR POWER COMPANY

or write the Publishers of this Magazine when you require further information about the cost and services for electricity.

The regular staff of contributing editors for ELECTRICITY ON THE FARM are intimately familiar with your problems. They spend all their time in the field gaining additional practical experience. The services of these men and women are yours to command. Address ELECTRICITY ON THE FARM, 21 West 10th Street, New York, or 6 North Michigan Avenue, Chicago.